

Mr. Lewis described the hummocks west of Bangor in Northampton county; the striated boulders; the clay plain; S. W. pointing striae near Bangor; the moraine ascending and descending the slopes of the Kittatinny mountain, west of the Delaware Water gap; boulders, 30 feet long, of fossiliferous Lower Helderberg limestone, from the outcrop in the valley in Monroe county, now perched on the crest of the mountain, 1400 feet above tide; boulders of well rounded Adirondack syenite from Northern New York; the moraine ascending to the summit and stretching westward across the Pocono plateau, 2000' A. T. where it forms Long ridge, twelve miles long, a mile wide and 100 feet high; damming Long pond; descending to the bed of the Lehigh river, and crossing the Hazleton coal field mountains, Cunnyngham valley and Nescopee mountain and the Susquehanna river above Berwick; its curious ascent and descent of the Shickshinny mountain, with a perched boulder on the crest; the ascent of the Alleghany or Great North mountain; the course of the moraine through Lycoming and Potter counties into the State of New York; its return, and its south-west course through Warren, Butler and Beaver counties to the Ohio State line.

The accompanying map was prepared to show the course of the moraine with regard to the topography.

Note on a large Fish-plate from the Upper Chemung (?) beds of Northern Pennsylvania. By E. W. Claypole.

(Read before the American Philosophical Society, April 6, 1883.)

During a visit paid in the northern counties of this State in October last, I met a gentleman residing in Susquehanna county, Mr. A. Carter, who told me that some time previously he had ploughed up in one of his fields a large stone containing very peculiar markings upon its surface. Being unable to recognize it from his description, I requested him to send it down to me for examination on his return home. This he did, and a single glance showed an impression of a very large fish-plate in excellent preservation. Except one or two marks which had been made by the point of the ploughshare the cast was perfect.

It was, however, unlike anything which I had previously seen, and no material within my reach gave me the means of identifying it. It was apparently a nondescript. I accordingly forwarded a rough outline and description to Prof. Cope, who told me in reply that he could not at the moment of writing, recall anything resembling it.

I next sent a similar communication to Dr. Newberry, with the request that he would inform me if in his collection there was any similar speci-

men. In reply he told me that he thought he had fragments that might belong to the same species, but they were not sufficiently perfect for description. Feeling anxious to have Dr. Newberry's decisive opinion I next forwarded to him a photograph of the plate, asking if that would enable him to express an opinion whether the specimen belonged to a described or an undescribed species of fish. In reply he informs me that the fish in question is undescribed, but that he has some fragments of what he thinks is the same species, too imperfect for description.

Knowing that Prof. Whiteaves, Palæontologist to the Canadian Survey, had been working recently among some new Upper Devonian fishes, I sent him a photograph, requesting his opinion upon it. He has replied, saying, that there is no similar specimen among all those which he has seen from Scaumenac bay, and that he believes it is undescribed.

DESCRIPTION.

The specimen in question so far as the means at my command enable me to determine belongs to some species of the genus *Pterichthys*, or to some kindred genus, and is apparently the ventro-median plate. It is pentangular in outline but inequilateral, nearly symmetrical but not perfectly so. The front (?) is formed by one of the angles of the pentagon and the two sides enclosing this angle (of about 80°) are slightly concave outwardly. One of these sides—the right on the east—is four and the other three and a quarter inches long. The former meets the third side of the pentagon at an angle of about 120° . This side is six and a quarter inches long. The latter meets at an angle of about 130° the fourth side of the figure which measures six and a half inches in length. The pentagon is closed at the base (back) by a short side of one and three-quarters of an inch long and very concave outwardly. The base is, in consequence of the inequality of the sides, slightly oblique.

The surface of the plate is marked with an ornamentation which I can not find mentioned in the accounts of any other species. Instead of showing the tubercular or pustulose appearance of *Pterichthys*, its character more resembles (if we compare the great with the small) a magnified scale of *Holoptychius*. It is completely covered with close set interrupted wrinkles, slightly wavy, anastomosing and again separating without any appearance of regularity. These wrinkles meet the outside line almost at right angles and radiate inward in the following manner: If from the middle point of the axis of the plate straight lines be drawn to the upper (front) and two lower (back) angles, and lines, upwardly convex, to the lateral angles, the wrinkles in question start from these lines so as to meet the periphery (as said above) nearly at right angles. The wrinkles are subequal in size, largest anteriorly and posteriorly where they measure as much as one-eighth of an inch in breadth and are separated by furrows of about equal width. They increase slightly in size towards the periphery and in the middle are very small and much interrupted.

A flat, finely striate margin surrounds the whole plate, commencing at

the anterior angle where its breadth is nothing and widening to the lateral angles where its breadth equals half an inch. The outer line of this margin between the lateral and basal (?) angles is straight, giving its greatest breadth about the middle of these sides where it equals an inch. The margin of the basal side is about three-quarters of an inch in breadth in the middle. The whole of this margin is very finely striate nearly at right angles to the sides of the plate.

This margin is evidently the portion of the plate which was overlapped by the adjoining plates and in this respect the resemblance between it and the ventro-median plate of *Pterichthys oblongus* Ag. is obvious.

The outline of the plate corresponds very closely with that of the dorso-median plate of *Pterichthys*, and were it not perfectly flat I should be inclined to refer it to that part of the exo-skeleton. But this flatness renders it more probable that it represents the ventro-median or well known "lozenge-plate" of Hugh Miller—the central piece of the armor of this fish on the lower side—overlapped on all sides by others.

Prof. Whiteaves has very kindly lent me for comparison the original and only specimen of the ventro-median plate of his new species, *Coccosteus Acadicus*. This, much more closely than my specimen, resembles the ventro-median plates of *Pterichthys* and *Coccosteus*, as given by Hugh Miller in his "Old Red Sandstone." It is quadrilateral, with two outwardly concave and two straight sides. The ornamentation is very peculiar, the plate being "quartered" if we may borrow an expression from heraldry, and having crenulated ridges parallel to the outer side in the first and fourth quarters and irregularly scattered tubercles in the second and third. Altogether it shows little resemblance to the plate here described.

Prof. Newberry remarked in his letter that he very much doubted if the plate here described belonged strictly to *Pterichthys* and was inclined to consider it the type of a new genus. Probably this will be the result of a better knowledge of its structure, but it would be premature in this note to found a new genus on the fragments already known. When other parts of the exo-skeleton have been found it will be time to consider its generic position. Meanwhile I suggest for it the provisional name, *PTERICHTHYS RUGOSUS*.

The accompanying figure is taken from a photograph and will suffice to preserve the appearance of the specimen for future comparisons in the event of its loss or destruction.

On the Kingsmill White Sandstone. By E. W. Claypole.

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Near the base of the red sandstones and shales which compose the Great Ponent series of Professor Rogers, lies a thin bed of white sandstone which promises to be of much interest, and perhaps of some importance in the